

# NAE Elects New Members

The National Academy of Engineering has elected 58 new members and five new foreign associates. This brings the total U.S. membership to 1187 with 105 foreign associates. The new members are:

**Harl P. Aldrich, Jr.**, Haley & Aldrich, Inc., Cambridge, Mass.; **Dell K. Allen**, manufacturing engineering, Brigham Young University; **William A. Anders**, Textron, Inc., Providence, R.I.; **Arthur Ashkin**, laser science research, AT&T Bell Laboratories, Holmdel, N.J.; **Nicolaas Bloembergen**, applied sciences, Harvard University; **Theodore A. Burtis**, Sun Company, Inc., Radnor, Pa.; **Anil K. Chopra**, civil engineering, University of California, Berkeley; **Richard J. Coar**, United Technologies Corp., East Hartford, Conn.; **Donald E. Coles**, aeronautics, California Institute of Technology; **James W. Dally**, IBM Corp., Manassas, Va.; **F. Paul de Mello**, Power Technologies, Inc., Schenectady, N.Y.; **Robert H. Dennard**, IBM Corp., Yorktown Heights, N.Y.; **Joseph F. Engelberger**, Unimation, Inc., Danbury, Conn.

**John V. Evans**, COMSAT Laboratories, Inc., Clarksburg, Md.; **Alexander Feiner**, integrated systems, AT&T Information System, Holmdel, N.J.; **Daniel W. Fox**, plastics technology, General Electric Co., Pittsfield, Mass.; **Robert S. Hahn**, Hahn Associates, Northboro, Mass.; **Robert D. Hanson**, civil engineering, University of Michigan, Ann Arbor; **Albert G. Holzman**, industrial engineering, engineering management and operations research, University of Pittsburgh; **Lawrence E. Jenkins**, Lockheed Missiles & Space Co., Austin, Tex.; **John F. Kahles**, Metcut Research Associates, Inc., Cincinnati, Ohio; **Thomas Kailath**, electrical engineering, Stanford University; **Ivan P. Kaminow**, photonics circuits research, AT&T Bell Laboratories, Holmdel, N.J.; **Jack D. Kuehler**, information systems and technology group, IBM Corp., White Plains, N.Y.; **Butler W. Lampson**, research systems center, Digital Equipment Corp., Palo Alto, Calif.; **John W. Leonard**, engineering, Morrison-Knudsen Co., Inc., Boise, Idaho; **Philip W. Lett, Jr.**, land systems division, General Dynamics, Warren, Mich.

**Miles C. Leverett**, private consultant (nuclear power), Monte Sereno, Calif.; **Peter W. Likins**, Lehigh University; **Dan Luss**, chemical engineering, University of Houston; **James W. Mayer**, materials science and engineering, Cornell University; **David W. McCall**, chemical research laboratory, AT&T Bell Laboratories, Murray Hill, N.J.; **Walter J. McCarthy, Jr.**, Detroit Edison, Mich.; **Carver A. Mead**, computer science, California Institute of Technology; **Robert Mehrabian**, School of Engineering, University of California,

Santa Barbara; **Franklin K. Moore**, mechanical engineering, Cornell University; **Thomas J. Murrin**, energy and advanced technology, Westinghouse Electric Corp., Pittsburgh, Pa.; **Paul M. Naghdi**, mechanical engineering, University of California, Berkeley; **Hyla S. Napadensky**, fire and explosion research, IIT Research Institute, Chicago; **Thomas K. Perkins**, production research, ARCO Oil and Gas Company, Dallas, Tex.; **Dabbala R. Reddy**, computer science, Carnegie-Mellon University.

**Eli Reshotko**, engineering, Case Western Reserve University; **Dominick J. Sanchini**, Rocketdyne Division, Rockwell International Corp., Canoga Park, Calif.; **John H. Schmertmann**, Schmertmann & Crapps, Inc., Gainesville, Fla.; **Roger A. Schmitz**, engineering, University of Notre Dame; **Joseph L. Smith, Jr.**, mechanical engineering, Massachusetts Institute of Technology; **Harold G. Sowman**, 3M Company, St. Paul, Minn.; **William E. Splinter**, agricultural engineering, University of Nebraska, Lincoln; **Marshall B. Standing**, retired senior engineering consultant, Standard Oil Company; **G. Russell Sutherland**, product engineering, Deere & Company, Moline, Ill.; **Joseph F. Sutter**, Boeing Commercial Airplane Company, Seattle, Wash.; **Leo J. Thomas**, Kodak Research Laboratories, Rochester, N.Y.; **Jerome J. Tiemann**, physicist, General Electric Research and Development Center, Schenectady, N.Y.; **Charles F. Tiffany**, research and engineering, Boeing Military Airplane Company, Wichita, Kans.; **Leland J. Walker**, Northern Engineering and Testing, Inc., Great Falls, Mont.

**Sheldon Weinig**, Materials Research Corp., Orangeburg, N.Y.; **Basil W. Wilson**, consulting oceanographic engineer, Pasadena, Calif.; **John Zaborsky**, systems science and mathematics, Washington University, St. Louis, Mo.

The new foreign associates are:

**Marcel L. J. Barrere**, directeur des recherches, Office National d'Etudes et Recherches Aerospatiales, Châtillon, France; **Donald F. Galloway**, consulting engineer, Leics, England; **Claude P. Seippel**, consultant, Brown Boveri Company, Zurich, Switzerland; **Eugene D. Shchukin**, director, laboratory for physico-chemico-mechanical phenomena, Institute of Physical Chemistry, Academy of Sciences of the U.S.S.R.; **Haldor F. A. Topsoe**, president, Haldor Topsoe A/S, Copenhagen, Denmark.

protect nascent industries was seen as damaging to agriculture. A particular target of the critics was the so-called parastatal agencies which in many Sahelian countries were given control over consumer and producer prices and granted authority to market food and conduct trade relations. These agencies, typically, have kept farm gate prices low, subsidizing food for city dwellers, but depriving farmers of incentives to venture beyond subsistence agriculture.

An influential document in this discussion is a World Bank report, *Accelerated Development in Sub-Saharan Africa: An Agenda for Action*, known as the Berg Report for Elliot Berg who headed the staff group that wrote it. Published in 1981 with an update in 1983, the report is regarded as a major expression of the case for "conditionality," that is of international agencies making approval of projects conditional on agreement by recipients to make specific policy and institutional changes.

The report certainly does not advocate that the bank simply issue take-it-or-leave-it ultimatums to would-be clients. Rather it argues that conditions in Africa require that the bank make more money available and change its own policies, for example, to finance recurrent costs in projects that require it and to provide funds to support policy reforms.

From the viewpoint of the recipient governments, making policy changes involves decided difficulties and risks. After independence, authorities had little choice but to rely on a small educated elite and expatriate specialists. Advice to shift economic power to the private sector may be logical, but in many countries the private sector is feeble. And policies rigged to subsidize food and imported goods for urban populations may be economically unsound but politically prudent. Devaluation of the currency can be a rational step fiscally, but it may also be a recipe for a coup. Nevertheless, the Sahelian countries to varying degrees have adopted policies designed to bolster production of food for domestic use and revised pricing, marketing and tax policies to support the new priorities.

Many observers see external constraints—drought, low world commodity prices, energy costs—as the major current obstacle to development. Others see the reliance of Sahelian countries on food aid and financial support as creating a long-term dependence on such assistance. Probably most threatening to the Sahelian future, however, is population growth. Common estimates have population in the region growing at an annual 2.7 percent and food production at 1.5